

THURSDAY, OCTOBER 16, 1873

D'ALBERTIS' EXCURSION INTO THE INTERIOR OF NEW GUINEA

IN a preceding number of NATURE (vol. viii., p. 305) some account has been given of the new Paradise-birds and other novelties recently discovered by Signor Luigi Maria D'Albertis in the interior of New Guinea. Signor D'Albertis, who is now in New South Wales, has lately published in the *Sydney Herald* an account of his month's excursion into the interior of that *terra incognita*, from which the following particulars are taken :—

D'Albertis started from Andai, a small village about ten miles from Havre Dorey, where, along with his companion Dr. Beccari, he had been resident with a Dutch missionary. By the aid of presents to the Corono, or headman of Andai, and promises of further payment on arriving at his destination, he succeeded in obtaining the services of six natives to carry his baggage and provisions to Atam, a populous village in Mount Arfak, where there was a Corono with whom he had already made acquaintance.

An early hour on September 4, 1872, was fixed for the traveller's departure, Dr. Beccari, the botanist, proposing to remain at Andai during the absence of his companion. After crossing a small creek in a canoe, the forest was entered. Besides six natives, D'Albertis was accompanied by a Malay interpreter and the wife of one of the natives, making eight persons in all. After a short walk over level ground a steep hill was reached, and crossed by a narrow pathway, fatiguing and difficult. The forest around was mountainous and gloomy, the silence being relieved only by the deep cooing of pigeons and the hoarse voice of a black Megapode (probably *Megapodius freycineti*). One of the latter served as dinner for the day. After arriving at the summit of the hill, an hour's walk across a level forest-country succeeded, whence a descent was made to a stream of water, deliciously clear and fresh. After this, hills were again ascended, gradually increasing in height, and the road became more and more difficult. Here the Lesser Bird of Paradise (*Paradisæa papuana*) was met with, and the large Crowned Pigeons (*Goura coronata*) were very numerous. At 4 P.M. a height of 1,500 feet above the sea, which was seen to the east, not very far distant, had been attained, and after a short descent an extensive watercourse, at this time nearly dry, was reached. Here natives were first encountered; a tribe of men, women, and children, accompanied by dogs and pigs, emerged from behind the large stones of the water-course. The men were armed with bows and arrows and the *parang*, a large knife, narrowed near the handle and widened towards the extremity. Some of the men approached and were friendly and inquisitive, whilst others kept at a distance, and formed small picturesque groups about the rocks of the watercourse. The women were very timid, and also kept apart in groups along with the children. Upon inquiries through the interpreter, it appeared that these Papuans were returning from an expedition to the sea-side to procure salt. After taking leave of some of the natives, who were going in another direction, D'Albertis accompanied the others to their

house, which was situated about 500 feet above the torrent. Here the forest was of the same gloomy character, but relieved by occasional clearings. At sunset a magnificent view over the harbour of Dorey and the island of Mansinam was obtained, and the birds raised their voices in chorus to salute the passing day. The house in which the night was passed contained four families. It was built on trunks of trees and entered by a long ladder. The stranger was well received, and presented with sugar canes, in return for which he gave his hosts tobacco.

The following day (Sept. 5), after some little difficulty, a start was made about 8 A.M., the chief of the house and some women accompanying the party. After descending to the watercourse passed on the previous day, the ascent of Mount Putat was recommenced, under the shade of large and umbrageous trees. At noon, the summit and village of Putat were reached, whence a fine view of the coast of Dorey and island of Mansinam were obtained. To the south-west rose some high mountains covered with dense vegetation. After an interval of repose, our traveller was anxious to depart, but was answered by the natives, that they had already arrived at Atam, and that they were not going any farther. It was not without much difficulty, and Signor D'Albertis showing them by his pocket barometer that they had not arrived at the requisite elevation of the place in question, that it was ultimately arranged that a fresh start should be made on the following morning.

The next day, accordingly, the party quitted the village of Putat, escorted by about 20 additional men, women, and children, and after descending to about 700 or 800 feet above the sea-level, commenced to re-ascend up the bed of another watercourse. About noon, a small stream of fresh water afforded an opportunity for refreshment, and at evening, after a further ascent, night-quarters were discovered in some uninhabited huts. On continuing the journey next day the party still ascended, until the summit of the mountain at an elevation of 3,600 feet was obtained. Here a halt was made in some huts similar to those used for the previous night, and Atam was visible to the west on the farther side of a deep valley. At this spot the Superb Bird of Paradise (*Lophorina atra*) was first seen, but examples were not obtained. To the south of the halting-place lofty mountains arose, considered to be 9,300 feet in height: to the east the view was impeded by thick forests of noble trees.

On continuing the journey a steep and difficult descent of about 900 ft. was made to the bed of a large river, containing more water than other streams previously passed, and said by the natives to flow into the Bay of Geelvink. After following up this river-bed for two or three miles, a rough track led away to Atam, the first houses of which were reached about 3 P.M. Here Signor D'Albertis determined to stop, being much exhausted by the journey, the latter part of which had been rendered fatiguing by the slipperiness of the paths caused by heavy rain. Next day messages were sent for the Corono or headman of Atam, who was resident higher up the mountain. D'Albertis was anxious to proceed farther himself, but his guides refused, stating that they had accomplished their agreement to bring him to Atam, and of this our traveller was satisfied, finding himself now at an elevation of 3,500 ft. above the sea-level.

Whilst waiting for the Corono, D'Albertis rambled about in the vicinity of his habitation, and found a fine young male of the Six-shafted Bird of Paradise (*Parotia sexpennis*), which had never been previously obtained except through native agency, and in imperfect condition. Other examples of both sexes were subsequently obtained, the adult male being always found alone in the thickest parts of the forest, whilst the female and young birds are usually met with at a lower elevation. Respecting this Paradise bird D'Albertis states that it is very noisy and feeds upon various kinds of fruit, more especially on a kind of fig which is very plentiful upon the mountain ranges. To clean its rich plumage, it scrapes a round place clear of grass and leaves, where the ground is dry, and rolls itself in the dust like a gallinaceous bird, at the same time elevating and depressing its plumage, and also raising and lowering the six remarkable plumes on its head, from which it derives its specific name. On the following day (Sept. 9), D'Albertis was fortunate enough to obtain adult specimens of the Six-shafted Paradise Bird just described, and also of the Superb Paradise Bird which he had observed on his way up the mountain. The latter is found on the same mountains, and feeds upon similar fruits; it flies about from branch to branch among the trees of the forest, uttering a cry of "ni-ed, ni-ed," and from this peculiar note is named by the natives, "Niedda," while the Six-shafted Paradise Bird is called "Coron-a." After skinning his Paradise Birds, Signor D'Albertis roasted their flesh for his dinner, and found it of an excellent flavour; his meal, however, was interrupted by the arrival of the Corono and his suite. Hearing a noise at the door, he turned and saw a number of men armed to the teeth. They entered, and defiled before him in silence, laid down their arms, and arranged themselves about the room. They were all adorned with necklaces and bracelets formed of shells, whilst quantities of flowers of bright and rich colours ornamented their hair, ears, and arms. After the men, followed women and children, until the house was full; last of all came the Corono himself, armed like the others, and lavishly adorned with flowers. He was followed by his son and daughter, both albinos, with hair of a clear white colour, eyes blue, and skin very white. Having entertained the Corono with a cup of cognac, Signor D'Albertis received a present of yams, maize, and oranges in return, and was informed that he was welcome to the country. Next day he received numerous visits from natives, and made large additions to his zoological collections. Finding the locality so rich, Signor D'Albertis determined to take an adjacent house, for which a rent of 4 metres of blue calico and four brass bracelets was demanded. On September 11 possession was taken of the new habitation, and the Italian flag hoisted on the summit. The house was divided by some pieces of bark into two rooms, one of which served as a bedroom and a workshop, whilst the other was the reception-room, and also served as a kitchen. When the news spread abroad that a white man had arrived, the visits of the Papuans became very frequent. Most of them brought yams, maize, or tobacco, for which Venetian beads were given in payment. On September 13 the guides who had brought Signor D'Albertis from Andai

left him to return home, taking messages to his companion Beccari, to endeavour to send up a new stock of provisions, which were running very short.

Established in his new quarters, Signor D'Albertis set to work on his collections of birds and insects, and succeeded in amassing a large number of interesting specimens. But his provisions quickly began to run short, leaving him only a small quantity of rice to subsist on together with the flesh of the birds prepared for his collections. Salt was not to be had, and powder and shot also began to fail, and endeavours to get a fresh supply of ammunition and provisions up from Andai did not succeed. In consequence of a quarrel between the Arfaks and the people of Dorey, in which one of the natives was killed, his friendly intercourse began to be interrupted. Neither women nor children brought him insects, and soon afterwards they refused to sell him yams and maize. The Corono informed him, through the interpreter, that they were expecting an attack at Atam, and intended to leave the village. This D'Albertis did not believe until they commenced destroying the plantations, when his position becoming critical from want of provisions, he arranged with the Corono to return to Andai at the end of the month.

On September 29, accordingly, D'Albertis left Atam at sunrise, accompanied by about forty persons, his health having been much improved by his sojourn in the mountain air. Returning by a shorter route, he avoided Putat, and on arriving, on October 1, at Andai, found, to his regret, that Signor Beccari had gone on to the former village, so that if he had passed through it he could have obtained a fresh supply of provisions.

During his month's residence at Atam, Signor D'Albertis obtained 122 specimens of birds, and a large collection of insects, besides some mammals and other specimens. The only part of these that have yet reached Europe is the series of birds, of which an account was given in a previous number of NATURE (vol. viii. p. 305). The mammals obtained are stated to embrace several species of *Cuscus*, one of which is believed to be new, two or three species of Tree-kangaroo (*Dendrolagus*), a *Pteropus*, a Squirrel, and several species of Mice and Bats. The Insect collection is rich in *Cetonia* and *Melolontha*.

Soon after his month's excursion to the Arfak mountains, Signor D'Albertis was compelled, by continued attacks of fever, to leave New Guinea and proceed to Sydney, in the Italian frigate *Vettore Pisano*. Dr. Bennett informs me that his health is now re-established, and that he will probably return to Europe in a few months.

This interesting narrative serves to show us that the dangers and difficulties of penetrating into the interior of New Guinea, though considerable, have been somewhat over-rated. Though Signor D'Albertis has been the first to publish an account of his adventures in this country, I believe that the naturalist Rosenberg, in the employment of the Leyden Museum, had already made an expedition into nearly the same district.* Where these two pioneers have found their way, others will doubtless

* Several of the new birds described by Dr. Schlegel, in his article on Rosenberg's collections (*Ned. Tijdschr.* iv p. 33), were also obtained by D'Albertis, but the only locality assigned to them is "l'intérieur de la grande presqu'île septentrionale de la Nouvelle-Guinée."

quickly follow, and we may thus hope to acquire, before long, a complete knowledge of one of the most wonderful florae and faunas of the world's surface.

P. L. S.

THE MOTION OF PROJECTILES

A Mathematical Treatise on the Motion of Projectiles, founded chiefly on the results of Experiments made with the author's Chronograph. By Francis Bashforth, B.D., Professor of applied Mathematics to the advanced class of Royal Artillery Officers, Woolwich, and late Fellow of St. John's College, Cambridge. (London: Asher and Co., 1873.)

WE are told in the Preface to this work that "the consideration of the motion of a projectile naturally divides itself into three parts—first, its motion in the bore of the gun; second, its motion through the air; and third, its motion during its penetration into a solid substance." The author directs his attention chiefly to the second of these parts. Galileo was the first person who determined with anything like accuracy the motion of a solid body moving through space under the action of gravity. Treating the vertical and horizontal motions as perfectly independent (which of course is in accordance with Newton's laws of motion), he showed that a particle moved in a parabola. In this theoretical investigation gravity is supposed to be constant, and to act in parallel directions, while the effect of the resistance of the air is totally disregarded. The parabolic motion is approximately true for bodies whose velocities are small, but the greater the velocity of a projectile, the more does its path deviate from a parabola, and, in the present days of large guns and heavy charges, we can at once see the importance of solving with the greatest possible accuracy the problem of the motion of a projectile through the air, considering the air as a resisting medium materially affecting the motion of the shot. Newton solved the problem of the motion of a body through a medium whose resistance varies as the first power of the velocity, and John Bernoulli extended it to the case of resistance varying as any power of the velocity.

Experiments, however, show that the resistance cannot be regarded as varying as any single power of the velocity, though, within certain limits, the third power gives pretty accurate results.

Mr. Bashforth has applied himself to the task of throwing Bernoulli's solution into a practical shape, so that by means of copious tables, of which his book contains more than 100 pages, such problems as the following may be solved:—"The 16-pounder muzzle-loading gun fires an ogival-headed shot 16 lb. in weight, and 3.54 inches in diameter. If the angle of projection be 2° , and the initial velocity 1,358 feet per second, find the trajectory and time of flight." "A Rodman shot weighing 452 lb. is fired with an initial velocity of 1,400 feet per second, at a target 500 yards off, find the striking velocity."

Experiments were made by Robins and Rumford last century to ascertain the pressure of fired gunpowder and several persons have attacked the problem during the present century. General Mayevski attempted to

solve the problem by firing shot, into the back of which a rod was screwed, the rod running through an aperture in the breech of the gun, and carrying a knife edge which cut two thin wires at a given distance, the interval of time between the two breakages being measured as accurately as possible. Captain Rodman made use of the following arrangement:—A gun was mounted in a gun-pendulum, and a revolving cylinder was placed with its axis parallel to that of the gun. When the gun was fired, a tracing point on the gun drew a curve on the revolving cylinder, the shape of which curve determined the whole motion of the gun's recoil. Mr. Bashforth suggested that much greater exactness would be procured if the tracing-point were connected with the projectile. He managed to do this to some extent by firing a shot through a number of equi-distant vertical screens, made of very thin metal wires. By an ingenious arrangement, the time of the shot breaking a wire in each screen was registered by means of an electric current on a revolving cylinder, special care being taken that all the registrations should be made under the same circumstances, so as to eliminate what we might call the personal error on the different registrations. This gave the times of transit of the shot over the successive intervals between the screens: from them, the velocities at the different screens can be calculated with great exactness, and also the resistance of the air on the shot. Mr. Bashforth has made great numbers of experiments with shots of different shapes and sizes, fired with different charges of powder, and from them has with great labour calculated the tables above referred to, which are sufficient for the solution of the problems we have given above as examples of what Mr. Bashforth has been able to accomplish.

The work is one which is too mathematical to do full justice to in our columns, but we have no hesitation in recommending it to such artillerymen as are not unacquainted with mathematical analysis.

OUR BOOK SHELF

Half-hours with the Microscope. By E. Lankester, M.D. (Hardwicke.)

THIS excellent and well-known little work would scarcely require to have special attention now drawn to it, if it were not that the present edition contains an additional chapter, which adds much to its value as a text-book for amateurs. Until now the subject of polarised light has been omitted, and as the many beautiful and striking results which can be obtained by its employment are among the most important and attractive in the whole field of microscopy, any work on the subject in which it is omitted must be necessarily incomplete. The author, evidently feeling this, has added a "Half-hour with Polarised Light," which he has entrusted to the hand of Mr. F. Kitton, who, in the short space allowed him, has explained the theory of this rather intricate subject in a clear and popular manner, and has described some of the most striking of the phenomena exemplified by it, such as the appearance of the slides of iodo-sulphate of quinine, asparagine and sulphate of copper in gelatin, together with the methods for arriving at them. The addition of this chapter has made this work as complete as it is useful to the commencing microscopist.

Proceedings of the Belfast Natural History and Philosophical Society. (Belfast, 1873.)

WE welcome with pleasure the first number of the Belfast Society's Proceedings, which includes a number of papers